

A CHROMOSOME STUDY OF AUSTRALIAN ORNITHOPTERA BOISDUVAL (LEPIDOPTERA: PAPILIONIDAE)

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Abstract

Chromosome numbers of $n=30$ are observed in *Ornithoptera euphorion* (Gray), *O. richmondia* (Gray) and *O. priamus poseidon* form-loc. *macalpinei* Moulds.

Introduction

The Lepidoptera show a great range in chromosome number, from $n=7$ to $n=220$, with a modal chromosome number at 29-31 (White 1973). Several Lepidoptera families have a different subsidiary mode, such as $n=23-24$ for Lycaenidae and $n=31$ for Nymphalidae. This study reports, for the first time, the chromosome number of the Australian birdwing butterflies of the *priamus* species-group, *Ornithoptera euphorion* (Gray), *O. richmondia* (Gray) and *O. priamus poseidon* form-loc. *macalpinei* Moulds. Specific nomenclature follows Nielsen *et al.* (1996).

Material and Methods

Karyological observations were carried out on both male and female, newly emerged adults bred in Innisfail. After 0.05% colchicine treatment for 2 hrs, the testes and ovarioles were dissected out and disassociated in a 1% sodium citrate solution for 20 minutes. After fixation in freshly made acetic acid-methanol (1:3) for at least 1 hr, the cell suspension was allowed to spread over a slide and air dried. Dispersion and evaporation of the fixative was facilitated by gently blowing over the slide. The slides were stained in 4% Giemsa in Sorensen phosphate buffer (ph=6.8) for approximately 30 minutes. The chromosomes were examined and photographed at magnification approximately 2700x.

Results and Discussion

During the male meiosis metaphase I stages, 30 bivalents are observed in all three species examined. In spermatogonial metaphases 60 chromosomes are clearly visible in all three species. The chromosomes are rod or dot shaped. This aspect may be interpreted by assuming the holocentric nature of chromosomes of Australian *Ornithoptera*, as has been described previously in other Lepidoptera groups (Maeki 1980).

According to Haugum and Low (1978-79), form-loc. *macalpinei* is a southern form of *O. p. pronomus* (Gray), which occurs at Cape York. Thus it is probable that all Australian populations of *Ornithoptera* have a modal number group of $n=30$ chromosomes.

To understand the karyotype evolution of *Ornithoptera* butterflies, it would

be interesting to analyse other species from the islands of New Guinea and the Solomons. As reported by Straatman (1976), hybridisation between sympatric birdwing taxa may occur in the field. Karyotype analysis may prove a useful tool in verifying a hybrid condition.

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